

WHAT IS CLAIMED IS:

1. An optical sheet comprising:

a retardation film; and

a transparent layer provided on one of opposite surfaces

5 of said retardation film;

wherein said retardation film exhibits  $Nz = (nx - nz) / (nx - ny)$  in a range of from 0.6 to 0.9 and  $(nx - ny)d$  in a range of from 200 to 350 nm in which d is a thickness of said retardation film, nz is a refractive index in a direction of a Z axis expressing a direction of the thickness d of said retardation film, nx is a refractive index in a direction of an X axis expressing a direction of said retardation film in a plane perpendicular to said Z axis while said X axis also expresses a direction of the highest in-plane refractive index, and ny is a refractive index in a direction of a Y axis expressing a direction of said retardation film perpendicular both to said Z axis and to said X axis; and

wherein said transparent layer has a thickness not larger than 10  $\mu\text{m}$  and exhibits refractive index anisotropy of  $nx \approx 20 ny > nz$ .

2. An optical sheet according to claim 1, wherein said transparent layer is made of a coating film of an organic material.

3. An optical sheet according to claim 1, wherein said transparent layer is constituted by a cholesteric liquid-crystal layer.

5 4. A polarizer comprising a laminate of an optical sheet according to claim 1 and a polarizing film.

10 5. A polarizer according to claim 4, wherein said polarizing film is disposed on a side of said optical sheet opposite to the transparent layer side of said optical sheet so that said X axis direction of said retardation film of said optical sheet is parallel with an axis of absorption of said retardation film.

15 6. A liquid-crystal display device comprising:  
a vertically oriented liquid-crystal cell; and  
a pair of polarizers each according to claim 5, said pair of polarizers being provided on opposite sides of said cell;  
wherein a transparent layer in each of said pair of  
20 polarizers is positioned on corresponding one of opposite sides of said cell; and  
wherein said pair of polarizers provided on said opposite sides of said cell are disposed in the form of crossed-Nicol.

7. A liquid-crystal display device according to claim 6, wherein a sum of absolute values of thicknesswise retardations each defined by a product of  $\{(nx + ny)/2 - nz\}$  and a layer thickness of said transparent layer in each of said pair of polarizers disposed on the opposite sides of said liquid-crystal cell is in a range of from 0.5 times to 1.3 times as large as an absolute value of a thicknesswise retardation of said liquid-crystal cell.

10 8. A liquid-crystal display device comprising:  
a vertically oriented liquid-crystal cell;  
a pair of polarizers each according to claim 5, said pair of polarizers being disposed in the form of crossed-Nicol on opposite sides of said liquid-crystal cell; and  
15 at least one phase retarder disposed between said liquid-crystal cell and one or both of said polarizers;  
wherein said phase retarder exhibits refractive index anisotropy of  $nx \neq ny > nz$ ; and  
wherein a sum of absolute values of thicknesswise retardations defined by a product of  $\{(nx + ny)/2 - nz\}$  and a layer thickness of each of transparent layers of said polarizers disposed on said opposite sides of said liquid-crystal cell and an absolute value of a thicknesswise retardation of said phase retarder is in a range of from 0.5

times to 1.3 times as large as an absolute value of a thicknesswise retardation of said liquid-crystal cell.

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